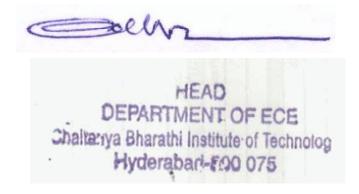
CHAITANYA BHARATI INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING Stake holder involvement in Curriculum Development AY 2020-21

Action taken and implementation in Curriculum

INDEX

S No	Name of the stake holder	Page No.
1	Industry	2-8
2	Alumni	9-13
3	Parent	14-21
4	Professional Societies	22-24
5	Faculty	25
6	Students	26

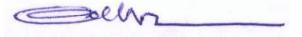


DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING Stakeholder involvement in Curriculum Development AY 2020-21

Action taken and implementation in Curriculum

1) Industry

S.no.	Suggestions & opinion	Actions Taken
S.no. 1	Suggestions & opinion In 7th semester you could introduce "Computer Vision", the syllabus could be: 1) Descriptors/Features for image recognition like SIFT, SURF, (2 weeks) 2) Multiple view geometry and homography, etc., matrices etc (4 weeks) 3) Image registration and RANSAC (1 or 2 weeks) 4) Image classification using CNNs (one week) 5) Image retrieval using visual words and/or deep learning approaches (one lecture) 6) Object detection using DNNs (one or two lectures).	Actions Taken Computer Vision course is included with the suggested topics
2	Computer architecture and microprocessor lab is missing. The students may be taught how to setup Ethernet, create routing tables, establish Wi-Fi communication, implement Bluetooth and Zigbee protocols to communicate with analog and digital sensors. Establish TCP-IP or UDP protocols.	These topics are included in Computer networks course
3	Emphasis to be given more on assignments, lab work and mini projects. Mini projects may be defined for few courses like Antenna theory / Microwave theory/Embedded systems/IoT etc. However the projects to be done on single person basis to strengthen each student.	Already Included in the syllabus.
4	Surveillance: RADAR (Primary and Secondary), ADS-B, MLAT (Multilateration) ASMGCS (Advanced surface movement guidance and control system)	It is included in the syllabus.



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1) Industry (Proof)

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UNIT-II

Medium Access sub layer: The channel allocation problem, Multiple access protocols: ALOHA, Carrier sense multiple access protocols, collision free protocols. Concepts of Local Area Networking technologies such as Zigbee, BT, WLAN. Data link layer switching. Ethernet, Data Link Layer switching, Wireless LAN. Broadband Wireless, Bluetooth

Cell

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UNIT-III

Network Layer: Design issues, Routing algorithms: shortest path routing, Flooding, Hierarchical routing, Broadcast, Multicast, distance vector routing, Congestion Control Algorithms, Quality of Service, Internetworking, the Network layer in the internet (IPv4 and IPv6).

UNIT-IV

Transport Layer: Transport Services, Elements of Transport protocols, Internet transport layer protocols: UDP and TCP. Application Layer: Domain Name System, electronic mail, World Wide Web: architectural overview, dynamic web document and HTTP.

UNIT-V

Application Layer Protocols: Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet

Text Books:

- Andrew Tananbaum and D. Wetherall, "Computer networks", 5^aEdition, Pressice-Hall, 2011.
 J.F. Kurose and K. W. Ross, "Computer Networking A top-down approach featuring the Internet", Pearson Education, 3^{ed}Edition, 2005.
- William Stallings, "Data and computer communications", Prentice Hall, 8thEdition,2007.

Suggested Reading:

- B. A. Forouzza, "Data Communications and Networking", Tata McGraw Hill, 4^aEdition, 2007.
 L. Peterson and B. Davie, "Computer Networks A Systems Approach", Elsevier Morgan Kaufmann Publisher, 5thEdition, 2011.
- 3. S. Keshav, "An Engineering Approach to Computer Networking", Pearson Education, 2^{ed}Edition, 2001.

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	 Plan, design and analyze the proposed mini project. To simulate and execute the mini project for validation. 														
 Enhance oral presentation skills. Prepare and submit the mini project report. 															
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Course Articulation Matrix															
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20EC C28

Credits

MICROWAVE AND RADAR ENGINEERING

Instruction	
Duration of SEE	
SEE	
CIE	

Prerequisite: Knowledge of Electromagnetics and Antennas

- Course Objectives: This course aims to: 1. To understand the importance of microwaves and their applications.
- 2. To understand the principle and operation of microwave sources.
- 3. To understand principle and operation of different radar systems.

Course Outcomes: Upon completion of this course, students will be able to:

- Apply the wave equations and their solutions to analyze the waves in the waveguides.
 Determine the scattering matrix for various microwave components.
- 3. Analyze the interaction of electron beam and RF field for various microwave sources.
- 4. Examine the principles of operation of pulse, CW and MTI radar system.
- 5. Compare different types of tracking radars.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	3	2	1	2	-	2	2	2	-	2	1	1	3	3	2
CO2	3	3	2	2	1	1	1	1	1	-	1	1	3	2	2
CO3	3	3	3	2	1	2	2	2	1	1	2	2	3	2	2
CO4	3	3	2	2	2	1	1	1	1	1	1	2	3	2	2
CO5	3	2	2	2	1	2	-	-	-	-	-	1	3	2	2

Unit-I

Introduction to Microwaves: Microwave frequency spectrum, Advantages and Applications of Microwaves. Rectangular Waveguides: Rectangular waveguides, TM and TE waves, Impossibility of TEM wave in waveguides. Wave Impedance. Circular Wave guides Concepts.

Microwave Cavities: Rectangular and Circular Cavity Resonators, Quality factor and applications of cavity resonators.

Unit-II

Microwave Circuits and Components: Concept of microwave hybrid circuit, Introduction to scattering parameters. Properties and S-parameters of reciprocal components - E and H Plane Tees, Magic Tee, Directional Coupler. Non Reciprocal Components: Familes - Composition and Faraday Rotation; Familes Components - Isolators, Gyrators and

Circulators. S- Parameters of Isolator and Circulator.

Unit-III

Microwave Tubes: Limitations of Conventional Tubes at Microwave Frequencies. Principles of Gunn Diode. O-type tubes: Two cavity klystron, velocity modulation process, bunching process. Output power and efficiency. Reflex Klystron-Velocity Modulation, Power out and efficiency, Electronic admittance.

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3 L Hours per week 3 Hours 60 Marks 40 Marks

3

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Helix TWT: Slow Wave Structures, Principles of Operation and Applications of TWT (qualitative treatment only). Concepts of Magnetron.

Unit-IV

Reder Systems: Introduction to radar, radar block diagram, and operation, radar frequencies, Applications of radar, Radar range Equation, Prediction of range performance, minimum detectable signal, receiver noise, probability density function, SNR, Integration of radar pulses, radar cross-section of targets, PRF and range ambiguities, transmitter power, system losses.

Unit-V

Radar Types: Doppler effect, CW radar, FM CW radar, nultiple frequencies CW radar. MTI radar, delay line canceller, rangegated MIT radar, blind speeds, staggered PRF. Principles of Tracking radar. Concepts of SAR and its applications Fundamentals of EMI and EMC, Surveillance Radar, Applications and Advantages. Introduction to Electronic warfare: ECM and ECCM.

Text Boolc

- 1. Samuel Y. Liao, "Microwave Devices and Circuits", 3/e, Pearson Education, 2003.
- 2. Merril. I. Skolnik, "Introduction to Radar Systems", 2/e, MGH, 2001.
- 3. V. Prasad Kodali, Engineering Electromagnetic Compatibility: Principles, Measurements, and Technologies, Wiley-IEEE Press, IEEE, 2001

Suggested Readings: 1. Rinzi P, "Microwave Devices and Circuits", 3/e, Pearson Education, 2003.

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2) Alumni

S.no.	Suggestions & opinion	Action taken
1	Probability & statistics and Linear algebra are very important for any field during and after bachelors, I hope it is covered in applied mathematics. If not it's better to add those courses (topics) in the syllabus (course).	Probability & statistics and Random variables & Random Process are already included in Mathematics and Analog Communication courses. PTSP as separate course will be included in the next regulation as decided in 9 th BoS meeting
2	Reduce courses and increase practical's, projects, self-learning, internships	Internships are made mandatory and weightage for project is increased. Encouraging students for self- learning through MOOCs. Mini Project is introduced in VI Sem.
3	Employability Skills – instead also develop entrepreneurship.	Entrepreneurship course is there as open elective

2) Alumni (Proof)

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CBIT (A) AICTE Model Curriculum with effect from AY 2020-21 20ECC08 ANALOG COMMUNICATION 3 L Hours per Week 3 Hours 60 Marks Instruction Duration of SEE SEE CIF 40 Marks Credits Prerequisite: A prior knowledge of signals and systems is required. Course Objectives: Collis course sins to: 1. Introduce the fundamentals of analog communication. 2. Provide the design details of various transmitter and receivers used in analog communication system. 3. Involve the students in analyzing performance of communication system by estimating noise. Course Outcomes: Course Outcomes: Upon completion of this course, students will be able to: 1. Understand the various linear and nonlinear modulation schemes. 2. Design various transmitters and receiven. 3. Assess a random signal by computing various statistical properties. 4. Evaluate the performance of analog communication system through the estimation of noise. 5. Infer the concepts of various pulse modulation schemes. Mapping of Course Outcomes with Program Outcomes and Program Specific Outcomes: PO/ PSO PO PO PO PO PO 1 2 3 4 5 PO 6 PO 10 PO 11 PO 12 PO PO PO PSO PSO PSO co CO1 C02 C03 CO4 CO5

UNTT-I

Linear Modulation Schemes: Need for Modulation, Double Side Band Suppressed Carrier Modulation, Balanced Modulator, Coherent Detector and Costas Detector. Conventional Amplitude Modulation, Phasor Diagram of AM, Switching Modulator, Envelope Detector. Hilbert Transform and its Properties. Single Side Band Modulation. Vestigial Side Band Modulation.

UNTT - II

UNIT - II Non-Linear Modulation Schemet: Angle Modulation, Frequency Modulation and Phase modulation, Concept of Instantaneous Phase and Frequency. Types of FM modulation: Narrow Band FM and Wide Band FM. FM Spectrum in Terms of Bessel Functions. Phasor Diagram of NBFM. Direct and Indirect (Armstrong's) methods of FM Generation. Foster-Seeley Discriminator for FM Detection. Introduction to PLL

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CBIT (A)

AICTE Model Curriculum with effect from AY 2020-21

UNIT-III

Transmitters and Receivers:

Transmitters and accelers: High Level and Low Level AM Transmitters. Principle and Operation of Tuned Radio Frequency receiver and Super Heterodyne Raceivers. Selection of RF Amplifier. Choice of Intermediate Frequency. Image Frequency and its Rejection Ratio, Raceiver Characteristics: Sensitivity, Selectivity, Fidelity. Double Spotting, Pre-emphasis and De-emphasis.

UNTT-IV

UNIT - IV Random Variables and Random Process: Concept of random variable, Uniform Random Variable, Gaussian Random Variable, Random Process: Concept of random process, Stationarity and Ergodicity, Anto Correlation and its Properties, Power Spectral Density and its Properties. Linear System with Random inputs: Random Signal Response of Linear System, Auto Correlation of Response.

UNIT - V Noise: Thermal Noise. White Noise. Noise Temperature. Noise in Two-Port Network: Noise Figure, Equivalent Noise Temperature and Noise Bandwidth. Noise Figure and Equivalent Noise Temperature for Cascaded Stages. Figure of Merit Calculations for AM, DSB-SC and SSB systems. Pulse Analog Modulation Schemes: PAM, PWM and PPM. Generation and detection of PAM, PWM and PPM.

Text Books:

- Simon Haykin, "Communication Systems", 2nd Edition, Wiley India, 2011.
 Herbert Taub, Donald L. Shiling & Goutam Saha, "Principles of Communication Systems", 3rd Edition, TMH, 2008
- Poyton Z. Peebles JR., "Probability Random Variables and Random Signal Principles", Tata McGraw Hill, 4th Edition, 2002.

Suggested Reading:

1. Singh, R.P. and Sapre, S.D., "Communication Systems", TMH, 2007.

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CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A) AICTE Model Curriculum with effect from AY 2022-23

AICTE Model Curriculum with effect from AT 2022-2.

B.E (Electronics and Communication Engineering)

	Course			heme struct			of Exami	ination	
S.mo	Code	Title of the Course	Hour	s per	week	Duration of SEE	Marim	Credit	
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			THE	ORY					
1	20ECC15	Computer Architecture and Microprocessors	3	-	-	3	40	60	3
2	20ECC16	Digital Communication	3	-	-	3	40	60	3
3	20ECC17	Digital Signal Processing	3	-	-	3	40	60	3
4	20ECC18	Linear and Digital Integrated Circuits	3	-	-	3	40	60	3
5	20MBC01	Engineering Economics and Accountancy	3	-	-	3	40	60	3
6		Professional Elective-I	3	-	-	3	40	60	3
7		Professional Elective-II	2	-	-	3	40	60	2
		P	RACT	ICAL	s				
8	20ECC19	Digital Communication Lab	-	-	2	3	50	50	1
9	20ECC20	Digital Signal Processing Lab	-	-	2	3	50	50	1
10	20ECC21	Linear and Digital Integrated Circuits Lab	-	-	2	3	50	50	1
11	20ECI02	Industrial/Rural Internship	3	-4 We	eks/90	Hours	50	-	2
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CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A) AICTE Model Curriculum with effect from AY 2022-23

B.E (Electronics and Communication Engineering)

SEMESTER - VI

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S.mo	Course Code	Tide of the Course	Hour	s per 1	reek	Duration of SEE in	Marinu	Credits	
			L	Т	P/D	Hours	CIE	SEE	
			THE	ORY					
1	20ECC22	Microcontrollers	3	-	-	3	40	60	3
2	20ECC23	VLSI Detign	3	-		3	40	60	3
3		Professional Elective-III	3	-	-	3	40	60	3
4		Professional Elective-IV	3	-	•	3	40	60	3
5		Professional Elective-V	3	-	•	3	40	60	3
6		Open Elective-I	3	-	-	3	40	60	3
			PRACT	ICALS					
7	20ECC24	Electronic Design and Automation Lab	-	-	2	3	50	50	1
8	20ECC25	Microcontrollers Lab	-	-	2	3	50	50	1
9	20ECC26	Mini Project	-	-	2	-	50	-	1
10	20EGC03	Employability Skills	-	-	2	3	50	50	1
	To	tal	18	-	8	27	440	510	22
		Clock	Hours I	er We	el: 26				
L: Lecture	e D:	Drawing				CIE: Co	ntinuous I	nternal Eva	luation
T: Tutoria	il P:	Practical/Project Semina	nar/Dissertation SEE: Semester End Exar						ion
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3) Parent

S.no.	Suggestions & opinion	Action Taken
1	Introduction to Electronic Warfare	It is included in MW &
2	Introduction to Signal intelligence systems	R R
3	Include application oriented and Industry related topics.	Application oriented and Industry related topics are included.
4s	Not only for the upcoming batches, but even for the current batch I would suggest an increase in the industry interactions and provide more opportunities in the field of ECE for both placements, internships and guided projects	Internship is made mandatory

3) Parent (Proof)

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ALCOUNTEE AND RADAR ENCINEERING Instruction 3 L Mours Duration of SEE 3 Hours SEE 60 Marks CIE 40 Marks Contin 3 Contin 10 contrast matching of file contrast matching Continuin the contraining matrix for various micrownes contrast. 3 Contraining the contraining matrix for various micrownes contrast. 3 Contraining the principle of operation of pulse, CO matrix micrownes contrast. 3 Contraining the principle of operation of pulse, CO matrix micrownes contrast. 3 Contraining the principle of operation of pulse, CO matrix micrownes contrast. 3 Contraining the principle of operation of pulse, CO matrix micrownes contrast. 3	20EC	C28														
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Unit-I Introduction to Microwaves: Microwave frequency spectrum, Advantages and Applications of Microwaves. Rectangular Waveguides: Rectangular waveguides, TM and TE waves, Impossibility of TEM wave in waveguides. Wave Impedance. Circular Wave guides Concept. Microwave Cavities: Rectangular and Circular Cavity Resonators, Quality factor and applications of cavity resonators. Unit-II Microwave Circuits and Components: Concept of microwave hybrid circuit, Introduction to scattering parameters. Propertie and S-parameters of reciprocal components – E and H Plane Tees, Magic Tee, Directional Coupler.	CO4	3	3	2	2	2	1	1	1	1	1	1	2	3	2	2
Introduction to Microwaves: Microwave frequency spectrum, Advantages and Applications of Microwaves. Rectangular Waveguides: Rectangular waveguides, TM and TE waves, Impossibility of TEM wave in waveguides. Wave Impedance. Circular Wave guides Concepts. Microwave Cavities: Rectangular and Circular Cavity Resonators, Quality factor and applications of cavity resonators. Unit-II Microwave Circulat and Components: Concept of microwave hybrid circuit, Introduction to scattering parameters. Propertie and S-parameters of reciprocal components – E and H Plane Tees, Magic Tee, Directional Coupler.	CO5	3	2	2	2	1	2	-	-	-	-	-	1	3	2	2
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HEAD DEPARTMENT OF ECE Chalteriya Bharathi Institute of Technolog Hyderabari-FOO 075

SEE 60 Marks CTE 40 Marks Credits 3 Prerequisite: Knowledge of Electromagnetics and Antennas 3 Course Objectives: This course aims to: 1 1 To understand the importance of microwaves and their applications. 2 To understand the principle and operation of microwave sources. 3 To understand principle and operation of different rolar systems. Course Outcome:: Upon completion of this course, students will be able to: 1 1 Apply the wave equations and their solutions to analyze the waves in the waveguides. 2 Determine the scattering matrix for various microwave components. 3 Analyze the interaction of electron beam and RF field for various microwave sources. 4 Examine the principles of operation of pulse, CW and MTI rolar system. 5 Compare different types of tracking radars.		3 Hours 0 Marks		31				RADA	AND	WAVE	ICRO	M				
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HEAD DEPARTMENT OF ECE Chaitarya Bharathi Institute of Technolog Hyderabar-F00 075 Helir TWT: Slow Wave Structures, Principles of Operation and Applications of TWT (qualitative treatment only). Concepts of Magnetron.

Unit-IV

Control V Radar Systems: Introduction to radar, radar block diagram, and operation, radar frequencies, Applications of radar, Radar range Equation, Prediction of range performance, minimum detectable signal, receiver noise, probability density function, SNR, Integration of radar pulses, radar cross-section of targets, PRF and range ambiguities, transmitter power, system losses.

Unit-V

Radar Types: Doppler effect, CW radar, FM CW radar, nultiple frequencies CW radar. MTI radar, delay line canceller, rangegated MII radar, blind speeds, staggared FRF. Principles of Tracking radar. Concepts of SAR, and its applications Fundamentals of EMI and EMC, Surveillance Radar, Applications and Advantages. Introduction to Electronic warfare: ECM and ECCM.

Text Book:

- 1. Samuel Y. Liao, "Microwave Devices and Circuits", 3/e, Pearson Education, 2003.
- Marril I. Skolnik, "Introduction to Radar Systems," 246, MeH 2001.
 V. Prasad Kodali, Engineering Electromagnetic Compatibility: Principles, Measurements, and Technologies, Wiley-IEEE Press, IEEE, 2001

Suggested Readings: 1. Rinzi P, "Microwave Devices and Circuits", 3/e, Pearson Education, 2003.

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20EC E34 IOT AND ITS APPLICATIONS (Professional Elective - VI) Instruction 3 L Hours per Week Duration of SEE 3 Hours SEE 60 Marks CIE 40 Marks Credits Prerequisite: Knowledge of Programming and Problem Solving, Computer Organization, and Embedded systems. Course Objectives: This course aims to: Provide an insight into the required infrastructure for IoT technology.
 Introduce Python Programming language and familiarize the IoT concepts, their origin, and methodology.
 Develop Django Framework and domain-specific applications. Course Outcomes: Upon completion of this course, students will be able to:
 1. Understand the terminology, exabling technologies, and various protocols of IoT.
 2. Illustrate the concepts of Machine to Machine, SDN, and NFV and build simple IoT systems using Raspberry Pi board, NodeMCU, and BeagleBone Black. 3. Apply the basics of Python programming language, which is used in many IoT devices. 4. Create the steps involved in IoT system design methodology. 5. Develop web applications using a python-based framework called Django and IoT technologies for domain-specific applications. Course Articulation Matrix PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 PS02 PS03 CO1 2 2 2 3 -1 2 2 2 ------CO2 2 2 2 2 2 1 2 2 -• . ---

UNIT-I

CO3 2 3 2

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CO5 3 2 3

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Introduction and Concepts: Introduction to Internet of Things, Definitions and Characteristics of IoT, Physical Design of IoT: Things in IoT, IoT Protocols, Concepts of zigbee, BT. Logical Design of IoT, IoT Functional Blocks, IoT Communication Models, IoT Communication APIs, IoT Enabling Technologies, Wireless Sensor Networks, Cloud Computing, Big Data, Communication Protocols, IoT Levels & Deployment Templates.

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UNIT-II

MACHINE TO MACHINE and Networking: Introduction, MACHINE TO MACHINE, Differences between IoT and MACHINE TO MACHINE, Software Defined Networking, Network Function Virtualization.

InT Physical Devices and End Points: Basic building blocks of an IoT device, Raspberry Pi-about the Raspberry Pi board, Raspberry Pi interfaces- Serial, SPI & 12C, Introduction to NodeMCU, Introduction to BeagleBone Black.

UNIT-III

Introduction to Python: Motivation for using Python for designing IoT systems, Language features of Python, Data types: Numbers, Strings, Lists, Tuples, Dictionaries, Type Conversions, Data Structures: Control of flow-if, for, utile, range, break/continue, pass, functions, modules, packaging, Python packages of Interest for IoT: JSON, XML, HTTPLib, URLLib, SMITPLib.

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UNIT-IV

Int Platforms Design Methodology: Introduction, IoT Design Methodology Steps-Purpose and Requirements Specification, Process Specification, Domain Model Specification, Information Model Specification, Service Specifications, IoT Level Specification, Functional View Specification, Operational View Specification, Device and Component Integration, Application Development, Case Study on IoT System for Weather Monitoring.

UNIT-V

IoT Physical Servers and Cloud Offerings: Introduction to cloud storage models and Communication APIs, WAMP: AntoBahn for IoT, Xively cloud for IoT. Python Web Application Framework: Django Framework-Roles of Model, Template, and View Domain-Specific IoTs: IoT applications for Home Antonation, Cities, Environment, Energy, Retail, Logistics, Agriculture,

health, Lifestyle, and introduction to HoT.

Text Books:

- 1. Arshdeep Bahga and Vijay Madisetti, "Internet of Things A Hands-on Approach", Universities Press, 2015.
- 2. Tony Gaddis, "Starting out with Python", 3rd edition, Pearson, 2015.

- Suggested Reading: 1. Francis da Costa, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1" edition, press Publications, 2013. 2. Matt Richardson, Shawn Wallace, O'Reilly, "Getting Started with Raspberry PS", SPD, 2014. 3. Petneru Raj and Amspana C. Ranzn, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases",

 - 1" edition, 2017

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PRINCIPLES AND APPLICATIONS OF AI (professional Elective-I) Instruction 3 L Hours per weak Duration of SEE Duration of SEE 3 Hours DEE 60 Marks CIE 40 Marks Credits 3 Prerequisite: Knowledge of probability, Linear Algebra, Data Structure and programming. 3 Course Objectives: This course aims to: 3 Prerequisite: Knowledge of probability, Linear Algebra, Data Structure and programming. 3 Prerequisite: Knowledge of probability, Linear Algebra, Data Structure and programming. 3 Prerequisite: Knowledge of probability, Linear Algebra, Data Structure and programming. 3 Prerequisite: Knowledge of probability, Linear Algebra, Data Structure and programming. 3 Prerequisite: Knowledge of probability, Linear Algebra, Data Structure and programming. 3 Prerequisite: Knowledge of Probability, Linear Algebra, Data Structure and programming. 3 Locate the concepts of Neural Networks and Pattern Recognition. 4 Dubartand knowledge representation methods. 4 Apply Expert Systems to solve real time problems. 5 Build algorithms using neural network techniques for various applications. 5 Coli 3 3 3 0 0 0 1 0 00 1 001 001 1 0012 0 001 001					_											
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1. Exposure to the foundation of Artificial Intelligence. 2. Familiarize the applications of Artificial Intelligence in Industry 3. Inculate the concepts of Neural Networks and Pattern Recognition Course Outcomes: Upon completion of this course, students will be able to: 1. Uoderstand the basics of AI and intelligent agents. 2. Apply Expert Systems to solve real time problems 3. Uoderstand the basics of AI and intelligent agents. 2. Apply Expert Systems to solve real time problems 3. Uoderstand the loading neural network techniques for various applications 5. Solve the various classification problems like object recognition Course Articulation Matrix Course Articulation Matrix Course Articulation Matrix Course Articulation Matrix Course 3 3 3 - 3 1 1 1 1 1 3 Course 3 3 3 - 3 1 1 1 1 1 3 CO2 3 3 3 3 - 3 1 1 1 1 1 3 CO4 3 3 3 3 2 2 1 1 1 1 1 1 3 1	Prerequ	izite: K	nowiedg	e of pro	obability	Lines	r Algebr	ra, Data	Structu	re and p	rogramm	ing.				
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Introduction to AI and Intelligent Agents: Concept of AI, current status of AI, Agents, Good Behavier: Environment, problem formulation. The structure of agents. Basic concept of Search Algorithms: Uninformed depth first search, breadth first search uniform cost search, depth limited search, iterative deepening search and informed search techniques like greedy best first search and A* algorithm, concepts of admissibility.	INTE D															
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CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A) AICTE Model Curriculum with effect from AY 2023-24

			Schem	e of Inst	ruction	Scheme of I	Tamina	tion	
S.mo	Course Code	Title of the Course	Ho	urs per w	reek	Duration of		imum urks	Credit
			L	Т	P/D	SEE in Hours	CIE	SEE	1
			TH	EORY		-			
1	20ECC27	Computer Networks	3	-	-	3	40	60	3
2	20ECC28	Microwave and Radar Engineering	3	-	-	3	40	60	3
3		Professional Elective-VI	3	-	-	3	40	60	3
4		Open Elective-II	3	-	-	3	40	60	3
5	20EGM04	Gender Sensitization	2	-	-	2	-	50	Non- Credit
			PRAC	TICALS					
6	20ECC29	Computer Networks Lab	-	-	2	3	50	50	1
7	20ECC30	IoT and Simulation Lab	-	-	2	3	50	50	1
8	20ECC31	Microwave Engineering Lab	-	-	2	3	50	50	1
9	20ECC32	Project: Part-1	-	-	4	-	50	-	2
10	20ECI03	Industrial Internship		5-6 W	leeks/135	Hours	50	-	3
	•	Total	14	-	10	23	410	440	17+3
		Clo	ck Hours	Per We	elc 24				
L: Lect	ture	D: Drawing				CIE: Continue	ous Inter	mal Eval	uation
T: Tub	orial	P: Practical/Project Semi	nar/Dis	sertatio	n	SEE: Semeste	r End Ex	aminati	on
				111					

B.E (Electronics and Communication Engineering)

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4) Professional Societies

S.no.	Suggestions & opinion	Action Taken
1	Professional elective 2 [5th sem] please change the title as CMOS Analog IC Design instead of Analog IC Design	It has been changed

4) Professional Societies (proof)

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20EC E07
CMOS Analog IC Design
(Professional Elective-II)
Instruction 2L Hours per week Duration of SEE 3 Hours SEE 60 Marks CIE 40 Marks Credits 2
Pre-requisites: Knowledge of basic circuit theory and Electronic Devices and circuits.
Course objectives: This course aims to: 1. The MOS characteristics, second order effects in MOSFET and MOS modelling. 2. The design and analysis of single stage and differential MOS Amplifiers. 3. The frequency response and noise analysis of the Amplifiers. Course Outcomes: After completion of this course, students will be able to:
 Recall the elementary concepts of MOS device, MOS amplifiers, Current Mirrors, frequency response and noise. Classify different types of MOS devices, MOS amplifiers and current mirrors. Analyze (analytically) a given amplifier circuit for extracting parameters like gain, impedance, bandwidth, noise, etc. Dosign an amplifier or it's subcomponent as per the given specification. Justify with sufficient trade-off the use of an appropriate amplifier or subcomponent for a given specification.
Course Articulation Matrix
P01 P02 P03 P04 P05 P06 P07 P08 P09 P010 P011 P012 PS01 PS02 PS03
CO1 3 3 1 -
CO2 3 3 · · · · · · · · · 3 3 ·
C03 3 1 3 - - - - - 3 3 - C04 3 2 3 1 - - - - - 3 3 -
C05 3 3 2 3 3 3 3 3
UNIT I MOS and it's Characteristics: Introduction to analog design, Basics of MOS device Physics: MOS as a Switch, MOS structure, MOS symbols, threshold voltage, derivation of MOS VI Characteristics, Second order effects, MOS parasitic capacitances overview, MOS small signal model, long channel vs short channel MOSFET. UNIT II Single stage MOS amplifiers: Basic concept of Amplifier, common source stage with resistive load, common source stage with diode load, common source stage with current source load, common source stage with source degeneration, Source follower, common gate stage, cascede stage, folded cascede. UNIT III Current mirrors: Basic Current Mirrors, Cascede Current Mirror (Gain , Output Resistance), Bipolar Current Mirrors, High out
Impedance Current Mirrors - Cascode Gain Stage, Wilson current mirror, Source degenerated current mirrors, MOS amplifiers using Current Mirror as load.
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B.E (Electronics and Communication Engineering)

SEMESTER - V

List of Co	arses in Professional Elective-I	List of	Courses in Professional Elective-II
Course code	Title of the Course	Course code	Title of the Course
20ECE01	CAD for VLSI Verification	20ECE07	CMOS Analog IC Design
20ECE02	Optical Communication	20ECE08	Mobile Celhilar Communication
20ECE03	Signal Detection Techniques	20ECE09	Biomedical Signal processing
20ECE04	Embedded C Programming	20ECE10	Sensors and Actuators
20ECE05	Software Defined Radio	20ECE11	Drones and Applications
20ECE06	Principles and Applications of AI	20ECE12	Fundamentals of Cloud Computing

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5) Faculty

S.no	Su	ggestio	ns/Feedba	ack		Action Plan
1	Include mini Project				the	It is included in the
	curriculu	m				syllabus.

5) Faculty (Proof)

	C26						MIN	I PRO	JECT											
	Instru	ction										2	P Hours	per Weel	k					
		ion of S	100											-	-					
	SEE													-	-					
	CE													50 Mark	5					
	Credi	15																		
Prere	quisite:	Knowb	edge of l	Electron	ic circu	its and (Commu	nication	i system	5										
Cours				rse aino																
				ats lean																
				ability to					roblem	5 .										
	3. 1	lo dene	lop tech	mical w	nting an	d prese	dation	dalls.												
Cours	e Outco	mes: U	Jpon cor	upletion	ofthis	course,	student	s will b	e able to											
	1. I	onusla	rte mini	project j	proposal	throug	h literat	ure sur												
				i analys																
				execute			ct for ve	didation	1											
				esentatio mit the :																
	3. 3	repare	200 900	THE REAL	num bus	joct rep	OPT.													
							Cours	se Artic	ulation	Matrix										
	PO1	PO2	PO3		PO 5	PO6	PO 7	POS	P09	PO10	PO11	PO12	PS01	PSO2	PSO3					
C01	2	3	2	2	-	2	1	1	3	-	2	3	2	3	2					
CO2	1	3	2	2	•	-	•	-	3	-	1	2	1	3	2					
CO3 CO4		2	1	2	2	-	-	-	3	-	-	-	-	2	1					
C04 C05	-	-	-	-	-	-	-	-	3	3	1	-	-	-	-					
005	•	•	-	1	•	•	•	•	2	2	1	-	-	-	-					
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	S. no							criptic	n					Durat	ion					
	1	_		m iden			ection							eeks						
	2													Veek						
	2 Preparation of abstract 3 Design, implementation and testing of the							ing of	the pro	oject				Veeks						
									ntation				4 1	eeks						
	4	4 Documentation and mini project presentation 4 Weeks																		
	_		Guidelines for the									Timur	n Marl	rs.						
	4			I)escrip	S. no Description								Maximum Marks						
	4 80	Week	dy Ass	I		tion						20								
S.:	4 no		kly Ass prepara	sessme		otion)							

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6) Students

S.no	Suggestions/Feedback	Action Plan
1	Include mini Project in the syllabus	Mini Project is included

6) Students (Proof)

							MIN	I PRO	JECT						
	Instru	ction										2	P Hours	per Week	
		ion of !	SEE									-			
	SEE														
	CIE													50 Mark	5
	Credi	ts.												1	1
Prere	quisite:	Knowl	edge of i	Electros	aic circu	its and (Commu	nication	1 system	5					
Cours	e Obie	tives:	This cou	rse aim	s to:										
			le stude			practical	l malina	tion.							
	2. 1	lo deve	lop capa	ability to	analyse	and so	lve real	worldy	problem	S.,					
	3. 1	lo deve	lop tech	nical w	iting an	d prese	atation	ddlls.							
Cours			Jpon cor ste mini							n:					
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			e oral pro												
	5. 1	repare	and sub	mit the :	mini pro	ject rep	xort.								
							Cour	se Artic	rulation	Matrix					
	PO1	PO2			PO 5	PO6	P07	POS		PO10	PO11	PO12	PS01	PSO2	
C01	2	3	2	2	-	2	1	1	3	-	2	3	2	3	2
CO2 CO3	1	3	2	2	-	-	-	-	3	-	1	2	1	3	2
C03	-	2	1	2	2	-	-	-	3	-	-	-	-	2	1
C04 C05	-	-	-	-	-	-	-	-	3	3	1	-	-	-	-
005	•	•	-	1	-	•	•	•	2	2	1	-	-	-	-
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	S. 110							criptic	D D				-	Durat	ion
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														Veek	
	2 Preparation of abstract							ing of	the pro	oject				Veeks	
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	_		Design Docum	i, impi ientati	on and	mini j	project	prese							
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